

REMARKS/ARGUMENTS

Claims 2-3, 5-7, and 13-28 are pending in the Application. Independent Claim 1 and dependent Claims 4 and 8 have been canceled. New independent Claim 25 is written in a format consistent with U.S. practice and incorporates all the limitations of previous presented Claims 1, 4 and 8. Previously presented dependent Claims 2-3, 5-7, and 13-24, and new Claims 26-28 now depend from new independent Claim 25. New dependent Claim 26 excludes optional monomer C. Currently amended Claim 5 and new dependent Claim 27 require a mole ratio of monomer A to monomer B of 1 : 1 to 2 : 5. Currently amended Claims 14-15 and new Claim 28 require a mole ratio of monomer A to monomer B of 1 : 2 to 2 : 5. Support for the more limited mole ratios is found in the Specification at page 8, lines 12-13. All other previously presented dependent claims have been amended to conform to new independent Claim 25.

No new matter has been added.

Rejection under 35 U.S.C. § 112, 2nd ¶

Claims 6 and 18-21 have been amended to specify the weight average molecular weight of the “polymer” of Claim 25. Accordingly, the Examiner’s rejection of Claims 6 and 18-21 under 35 U.S.C. § 112, 2nd ¶, should be withdrawn.

Rejection under 35 U.S.C. § 102 over Anchor

Previously presented Claims 1-3 and 8 were rejected under 35 U.S.C. § 102(b) as anticipated by Anchor (Anchor et al., U.S. Patent 5,478,883, patented December 26, 1995) (Office Action (OA), ¶¶ 4-6, pp. 2-3). Because the mole ratio limits of monomer A to monomer B found in canceled Claim 4 have been incorporated into new Claim 25, monomer C has been excluded from new Claim 26, and currently amended Claims 2-3, 5-7, and 13-24 and new Claims 26-28 all directly or indirectly depend from new independent Claim 25, the rejection should be withdrawn. The polymerized monomer composition of Anchor’s

Example 1 includes 3 parts by weight of an alkoxyated diallylamine water-soluble surfactant, 49 parts by weight styrene, 49 parts by weight butylacrylate, and 2 parts by weight methacrylic acid. The water-soluble polymer prepared therefrom is not obtained by free radical polymerization of a monomer composition of Applicant's Claim 25 wherein the mole ratio of monomer A to monomer B is 1 : 1 to 1 : 6. Moreover, new dependent Claim 26 excludes both the styrene and butylacrylate monomers present in the monomer composition of Anchor's Example 1. Accordingly, the subject matter defined by Applicant's currently amended and new claims is patentable over Anchor's disclosure.

Rejection (1) under 35 U.S.C. § 102 over Gopalkrishnan

Previously presented Claims 1-3, 6, 8, and 18-19 were rejected under 35 U.S.C. § 102(b) as anticipated by Gopalkrishnan (Gopalkrishnan et al., U.S. Patent 5,733,861, issued March 31, 1998)(OA, ¶¶ 7-8, pp. 3-4). The Examiner correctly found that Gopalkrishnan does not anticipate a water-soluble or water-dispersible polymer, wherein the polymer is obtained by free radical polymerization of a monomer composition comprising monomer A, monomer B, and optionally, monomer C of Applicant's previously presented Claim 4 wherein the mole ratio of monomer A to monomer B is 1 : 1 to 1 : 6. Previously presented Claim 4 has been canceled and its limitations have been incorporated into new independent Claim 25. Moreover, a mole ratio of monomer A to monomer B of 1 : 1 to 2 : 5 is required by currently amended Claims 5 and new dependent Claim 27, and a preferred mole ratio of monomer A to monomer B of 1 : 2 to 2 : 5 is required by currently amended Claims 14-15 and new dependent Claims 26 and 28. Mole ratios of monomer A to monomer B within the ranges 1 : 1 to 2 : 5 and 1 : 2 to 2 : 5 are far outside the bounds of the (x+y):z ratio of 1 : 5 to 1 : 1000 that Gopalkrishnan specifies for the hydrophilic copolymers it generically defines as formula II wherein R₅ is selected from a broad group of monomeric derivatives of preferred alkoxyated allyl alcohols and other non-preferred polymerizable olefinic moieties such as

diallylamines which are capable of adding ethylene oxide. See Gopalkrishnan, column 2, line 37, column 4, line 21; and column 4, lines 47, to column 5, line 9. The Examiner will note from Gopalkrishnan, column 7, line 34, to column 9, line 6, that Gopalkrishnan's preferred hydrophilic copolymer of Formula II is prepared from acrylic acid and alkoxyated ally alcohol monomers at a mole ratio on the order of 116 : 1 (Gopalkrishnan, col. 8, l. 65, to col. 9, l. 6). The Examiner will also note that Gopalkrishnan's preferred ratio of (x+y):z is "50:1 to 800:1, more preferably about 100:1 to 500:1, and most preferably 125:1" (Gopalkrishnan, col. 3, ll. 54-58). Because the subject matter Applicant currently claims is not anticipated by Gopalkrishnan, the Examiner's rejection under 35 U.S.C. § 102(b) over Gopalkrishnan should be withdrawn.

Rejection (2) under 35 U.S.C. § 102/103 over Gopalkrishnan

Previously presented Claims 7, 22, and 23 were rejected under 35 U.S.C. § 102/103 over Gopalkrishnan. For the reasons stated in Applicant's response to Rejection (1) under 35 U.S.C. § 102/103 over Gopalkrishnan, the rejection of dependent Claims 7, 22, and 23 as anticipated by, or obvious in view of, Gopalkrishnan should be withdrawn.

The arguments presented in support of the Examiner's rejection of Claims 7, 22, and 23 under 35 U.S.C. § 103 for obviousness over Gopalkrishnan are directed exclusively to the K value specified for the claimed polymer (OA, ¶¶ 9-12, pp. 4-5). The K value of a polymer relates to the ionic dissociation and solubility of the polymer in water (Spec., p. 9, ll. 19-21; p. 20, table). The Examiner argues that the K value is dependent upon the molecular weight and chemical composition of the polymer. Therefore, since polymers encompassed by Applicant's claims and included in Gopalkrishnan's broadest disclosure appear to have common molecular weights and common compositions, persons having ordinary skill in the art reasonably expect the same or substantially the same K values for both (OA, ¶ 12, pp. 4-5).

The defects in the Examiner's argument are evident. First Gopalkrishnan's hydrophilic copolymers do not anticipate, and the Examiner does not find that Gopalkrishnan's hydrophilic copolymers anticipate, polymers Applicant currently claims. Second, the ratio of $(x+y):z$ for Gopalkrishnan's preferred Formula II copolymers is so far from the mole ratio of 1 : 1 to 1 : 6, preferably 1 : 1 to 2 : 5, and more preferably 1 : 2 to 2 : 5, for the mole ratio of monomer A to monomer B in the polymers Applicant currently claims that persons having ordinary skill in the art *prima facie* would not have expected any of the polymers Gopalkrishnan describes to have the same or similar K values as the polymers Applicant claims. Common molecular weights do not alone support a conclusion that similar polymers and all their inherent properties are the same or substantially the same. The Examiner appears to recognize that the polymers Applicant currently claims are not the same or similar to the copolymers Gopalkrishnan describes. Therefore, there is no reasonable basis for the Examiner's finding that their properties are the same or similar. The Examiner's alternative rejections of Claims 7, 22 and 23 under 35 U.S.C. § 102/103 should be withdrawn.

Rejection (3) under 35 U.S.C. § 103 over Gopalkrishnan

Previously presented Claims 4-5, 14-17, 20-21, and 24 were rejected under 35 U.S.C. § 103(a) over Gopalkrishnan (OA, ¶¶ 13-16, pp. 5-6). The Examiner argues (OA, p. 6):

[T]he disclosed polymer comprises those having $x:z = 5:1$ to $1000:1$. This range overlaps the claimed range. "In the case where the claimed ranges 'overlap or lie inside ranges disclosed in the prior art' a *prima facie* case of obviousness exists." (MPEP § 2144.05(I)). Moreover, since the "oxyethylated moiety . . . has extensive solubility in water," (col. 4., lines 35-39), it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have increased the ratio of the ethoxylated diallylamine to the (meth)acrylic acid in order to further increase the solubility of the polymer in an aqueous medium.

First, Gopalkrishnan's range of $x:z = 5:1$ to $1000:1$ does not overlap the mole ratio of monomer A to monomer B of 1 : 1 to 2 : 5 in Applicant's current Claims 5 and 27 or 1 : 2 to 2 : 5 in Applicant's current Claims 14, 15, 26, and 28. Second, Gopalkrishnan's preferred ratio of $(x+y):z$ is "50:1 to 800:1, more preferably about 100:1 to 500:1, and most preferably

125:1” (Gopalkrishnan, col. 3, ll. 54-58). Gopalkrishnan’s examples report a molar ratio of acrylic acid to oxylethylated allyl alcohol of “about 116:1” (Gopalkrishnan, col. 8, l. 65, to col. 9, l. 6). Thus, Gopalkrishnan teaches away from the mole ratios of monomer A to monomer B required by Applicant’s claims. Persons having ordinary skill in the art would not have been led to optimize the monomer mole ratio to increase the water solubility of Gopalkrishnan’s hydrophilic copolymers by decreasing the (x+y):z ratio because Gopalkrishnan prefers to move in the opposite direction and increase the (x+y):z ratio from ten to twenty times higher than any mole ratio of monomer A to monomer B in Applicant’s claims. If anything, Gopalkrishnan prefers to decrease the amount of alkoylethylated polymerizable olefinic moiety in its copolymer. Obviousness is a fiction.

The Examiner’s argument in support of obviousness has an air of impermissible hindsight reconstruction. The Examiner’s rejection is especially untenable where the claimed mole ratio limits for monomer A to monomer B for Applicant’s claimed polymers not only do not overlap but also do not touch the non-preferred extremes of the range of mole ratios Gopalkrishnan found permissible. The Examiner’s rejection should be withdrawn.

Rejection under 35 U.S.C. § 103 over Gopalkrishnan in view of Hirata

Previously presented Claim 13 was rejected under 35 U.S.C. § 103 over Gopalkrishnan in view of Hirata (Hirata et al., EP 1,118,598, published July 25, 2001)(OA, ¶¶ 17-20, pp. 6-7). The Examiner argues that Gopalkrishnan’s hydrophilic copolymers are dispersants which significantly reduce the viscosity of concentrated liquid detergents and improve their stability (OA, p. 6). The Examiner appears to recognize that Gopalkrishnan does not suggest that the hydrophilic copolymers it describes might be combined with cement and water for any purpose whatsoever (OA, p. 6).

The Examiner finds that Gopalkrishnan anticipates the polymers Applicant claims. The Examiner’s finding does not apply to Applicant’s current claims.

The Examiner finds that Hirata teaches a composition comprising cement, water, additives, and a polymeric dispersant which is “a polycarboxylic acid having a polyalkylene glycol at a side chain” (OA, p. 7). The Examiner also finds that Hirata achieves “high water reduction of a cement composition” [0045] when its specific polymeric cement dispersant is added (OA, p. 7).

The Examiner concludes from the combined disclosures that it would have been obvious to a person having ordinary skill in the art to replace Hirata’s polymeric dispersant with Gopalkrishnan’s hydrophilic copolymer dispersants to reduce the viscosity of Hirata’s cement compositions and improve their stability (OA, p. 7). However, Hirata does not generally teach or reasonably suggest that other polymeric dispersants are comparable to the polymeric dispersants Hirata adds to cement or may be added to cement compositions for other reasons. Hirata’s cement composition and Gopalkrishnan’s detergent composition do not have similar chemical structures, physical properties, or comparable utilities. Cement compositions have special setting and strength requirements (Spec., p. 2, ll. 37-39). Detergent compositions have nothing of the kind. Moreover, Hirata’s teaching is limited to specific monomers and specific weight ratios thereof. Hirata states [0038; emphasis added]:

If those component ratios and weight average molecular weight are fallen [sic] outside of the above ranges, a cement which exhibits high water reducing performance and sump loss preventing performance cannot be obtained.

In short, Hirata’s purposes cannot be achieved using dispersants outside the scope of Hirata’s disclosure. Where then would a person having ordinary skill in the art learn to reduce the viscosity or improve the stability of Hirata’s cement composition by adding the hydrophilic copolymer dispersants Gopalkrishnan adds to concentrated detergents to reduce their viscosity and improve their stability? The only place a person having ordinary skill in the art would have found a suggestion to do what Applicant has done is Applicant’s Specification.

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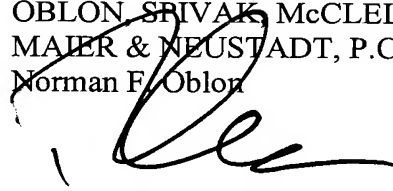
The basis for the Examiner's rejection of Applicant's claims can only be found in Applicant's Specification.

Nevertheless, even if it would have been "obvious to try" Gopalkrishnan's detergent dispersants in Hirata's cement composition, persons having ordinary skill in the art would not have been led to the cement compositions Applicant claims. The polymer Applicant currently claims is not anticipated by, and would not have been obvious in view of, the hydrophilic copolymer dispersants Gopalkrishnan discloses for use with detergents.

Applicant's current claims are patentable over the applied prior art. Applicant earnestly asks the Examiner to pass the current claims to issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Richard L. Treanor
Attorney of Record
Registration No. 36,379

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)